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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/819,329	03/28/2001	Akio Enomoto	791_142	4236

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EXAMINER
CREPEAU, JONATHAN

ART UNIT	PAPER NUMBER
1746	

DATE MAILED: 09/24/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/819,329	ENOMOTO ET AL.	
	Examiner	Art Unit	
	Jonathan S. Crepeau	1746	

-- The MAILING DATE of this communication appears on the cover she t with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *27 June 2003* .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *2,3,5-16 and 18-28* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *2,3,5-16 and 18-28* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☒ The proposed drawing correction filed on *27 June 2003* is: a)☒ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 9 .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other:

DETAILED ACTION

Response to Amendment

1. This Office action addresses claims 2, 3, 5-16, and 18-28. Claims 2, 3, 5-8 18-20, 22, 24, and 26 remain rejected under 35 USC §103 for substantially the reasons of record. Applicant's submission of the priority document translation has overcome all rejections based on EP 1059681 and U.S. Patent 6,468,692. However, claims 9-13, 15, 16, 21, 23, 25, 27, and 28 are newly rejected under 35 USC §103 herein. Additionally, claims 2, 3, 6, 7, 9-16, 18-20, and 21-27 are newly rejected under the doctrine of obviousness-type double patenting. Accordingly, this action is non-final.

Claim Objections

2. Claims 18, 20, 22, 24, and 26 are objected to because each of these claims depends directly or indirectly from claim 1, which has been canceled. Appropriate correction is required.

3. Claim 20 is objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form. Claim 20 recites that the battery capacity is not less than 2 Ah. However, this does not meaningfully limit the presumed parent claim (claim 6) which recites that capacity of the internal electrode body is not less than 2 Ah.

Claim Rejections - 35 USC § 112

4. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

5. Claim 12 is rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. Claim 12 has been amended to recite that "stress of less than a constant amount will be applied to said elastic body." It is the Examiner's position that this limitation is not supported by the originally-filed application. The application supports a recitation of the stress *not* being less than a constant amount. See, for example, original claim 12. An amendment reinserting the word --not-- is suggested.

Claim Rejections - 35 USC § 103

6. Claims 2, 3, 6, 7, 18-20, 22, 24, and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP 10-162801 in view of EP 895297 (Nemoto et al).

Regarding claims 6 and 19, JP 10-162801 teaches a lithium secondary battery comprising an electrode body wound on a hollow winding core (13; see abstract, Figure 1). The battery comprises a cylindrical battery case having both ends open (see Figure 6), and electrode caps (2,

3) having internal and external terminals (see Fig. 1). Regarding claims 3 and 6, the electrode caps have center hollow portions (4) functioning as pressure release holes in a position corresponding with the center axis of the winding core (see Fig. 1, paragraph 14 of the machine translation). Regarding claim 2, the center axis of the winding core overlaps the center axis of the battery case (see Fig. 1). Regarding claims 6 and 7, the area of the hollow portion of the winding core and the area of the pressure release hole are identical (see Fig. 1). Regarding claim 19, the electrode caps are formed in approximately rotary symmetry around the center axis of the battery case (see Fig. 1).

JP '801 does not expressly teach that the battery is a lithium secondary battery, as recited in claims 6 and 19. The reference further does not teach that the battery has a capacity of at least 2 Ah, that the area of the pressure release hole is larger than 0.3 cm^2 (claims 6, 19, and 20), or that the ratio of the area to the capacity is larger than 0.02 cm^2/Ah (claim 6). The reference further does not teach that the pressure release hole is used as the electrolyte solution inlet (claim 18), or that the battery is used in electric vehicles (claims 22, 24, and 26).

EP '297 teaches a lithium secondary battery in the abstract. The battery preferably has a capacity of 5Ah, as disclosed in paragraph 27. The battery further comprises pressure release mechanisms having areas of larger than 0.1 cm^2, whereby the ratio of the area to the capacity is in the range of 0.05-2.0 cm^2/Ah (see paragraphs 76 and 83). The battery is used in electric vehicles and hybrid electric vehicles (see paragraph 101).

Therefore, the invention as a whole would have been obvious to one of ordinary skill in the art at the time the invention was made because the artisan would be motivated by the

disclosure of EP '297 to use a large capacity lithium secondary battery as the battery of JP '801. In paragraph 2, EP '297 teaches that lithium secondary batteries have "large energy densit[ies]" and are an "effective means for using electric power by storing the electric power in the night. Thus, it is eagerly desired to put a large capacity lithium secondary battery, which is suitable for these uses, into early practical use." Accordingly, the artisan would be motivated to use a large capacity lithium secondary battery as the battery of JP '801.

Further, the artisan would be motivated by the disclosure of EP '297 to use valves in the battery of JP '801 having areas larger than 0.1 cm^2. In paragraph 83, EP '297 teaches that "it is preferable to make the opening area of the pressure release mechanism 0.1cm^2 or more in order to definitely operate the opposite pressure release mechanisms and to secure the safety by making the difference in the operation pressure of the opposite pressure release mechanisms preferably not larger than 8 kg/cm^2." Accordingly, this would provide motivation for the artisan to use valves in the battery of JP '801 having areas larger than 0.1 cm^2. Further, the artisan would be motivated by the disclosure of EP '297 to use capacity and area values such that the ratio of the area to the capacity is in the range of 0.05-2.0 cm^2/Ah. In paragraph 77, EP '297 teaches that when this value is below 0.05, "the pressure release is not sufficiently carried out and accidents such as burst or firing of a battery is caused." Similarly, in paragraph 78, the reference teaches that when the value is larger than 2, "there is a fear that a part of the internal electrode body or components of the battery would jump out from the opening portion, or when a part of the internal electrode body jumps out in the state of a short circuit, inflammable materials around the battery would be fired or burned." Accordingly, this would motivate the artisan to

use capacities and areas in the battery of JP '801 such that the ratio of the area to the capacity is in the range of 0.05-2.0 cm^2/Ah.

Regarding claims 22, 24, and 26, these claims recite the use of the battery in an electric vehicle or hybrid electric vehicle. Although EP '297 discloses the use of its battery in such a vehicle, these claims do not have to be accorded patentable weight since they recite an intended use. See MPEP §2114. Claim 18, which recites the intended use of the pressure release hole as an electrolyte inlet, also does not have to be accorded patentable weight for this reason.

7. Claims 5 and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP 10-162801 in view of EP 895297 as applied to claims 2, 3, 6, 7, 18-20, 22, 24, and 26 above, and further in view of Teramoto (U.S. Patent 5,571,632).

JP '801 does not expressly teach that the winding core has a thickness of at least 0.8 mm (claim 5), or that the winding core is made of aluminum (claim 8).

The patent of Teramoto is directed to a lithium battery. In column 3, line 38, the reference teaches an inner tube (i.e., winding core) (11) having a thickness of 2 mm. In column 4, line 13, the reference teaches that the inner tube is made of aluminum.

Therefore, the invention as a whole would have been obvious to one of ordinary skill in the art at the time the invention was made because the artisan would be motivated to use the inner tube of Teramoto as the winding core of JP '801. In column 5, line 57, Teramoto teaches that by using the inner tube, "it is possible to easily affect the sealing by, for example, the pipe

expander. [...] In addition, it is possible to obtain a high sealability or hermetic property." Accordingly, this would provide sufficient motivation for the artisan to use the inner tube of Teramoto as the winding core of JP '801.

8. Claims 9-12, 15, 16, 21, 23, 25, 27, and 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over JP 10-162801 in view of EP 895297 as applied to claims 2, 3, 6, 7, 18-20, 22, 24, and 26 above, and further in view of JP 11-049217.

JP '801 does not expressly teach that the pressure release valve comprises an elastic body, a metal foil and a spacer, the elastic body and metal foil being brought into pressure contact with the spacer to seal the battery case, as recited in claim 9. The reference further does not teach that the elastic body is fluoride resin packing, as recited in claims 15 and 16, that the spacer is a ring member such that stress of (not) less than a constant amount will be applied to the elastic body (claim 12), or that the metal foil is formed so as to have a surface pressure of not less than 980 kPa (claim 10).

JP 11-049217 is directed to a battery having a safety valve (see abstract). The safety valve comprises a sticking-by-pressure ring (spacer) (4), an airtight ring (elastic body) (5) and an aluminum foil relief valve (3) (see Fig. 1; paragraphs 4-6 of the machine translation). The elastic body may be made of polytetrafluoroethylene resin (see paragraph 6). In paragraph 6, the reference teaches that the relief valve bursts at a pressure of about 15 kg/cm^2 (1471 kPa).

Therefore, the invention as a whole would have been obvious to one of ordinary skill in the art at the time the invention was made because the artisan would be motivated to use the valve structure of JP '217 in the battery of JP '801. In the abstract, JP '217 teaches that "the safety valve of an explosion-proof device is extremely highly accurate in burst pressure absolute-value and variation." Accordingly, the artisan would be motivated to use the valve structure of JP '217 in the battery of JP '801.

Regarding claim 11, the aluminum spacer of JP '217 would inherently have a Young's modulus of not less than 170 GPa.

Regarding claim 28, JP '217 teaches in paragraph 6 that the elastic body, the foil, and the stopper ring are fitted into the lid, in that order. However, this is not the exact order of the method steps recited in claim 28, i.e., that the metal foil and elastic body are first combined with the spacer to form a pressure release hole unit, and then the unit is fit into the plate member. However, it has been held that selection of any order of performing process steps is *prima facie* obvious in the absence of new or unexpected results. See *In re Burhans*, 154 F.2d 690, 69 USPQ 330 (CCPA 1946); MPEP §2144.04(IV)(C). Accordingly, the method recited in claim 28 is an obvious variation of the method disclosed by JP '217.

9. Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over JP 10-162801 in view of EP 895297 in view of JP 11-049217 as applied to claims 9-12, 15, 16, 21, 23, 25, 27, and 28 above, and further in view of Yamahira et al (U.S. Patent 6,355,372).

JP 11-049217 does not expressly teach that the foil is coated by a fluoride resin, as recited in claim 13.

Yamahira et al. is directed to a battery cleavage valve comprising a fluorine-based waterproofing agent coated on a foil surface (see abstract).

Therefore, the invention as a whole would have been obvious to one of ordinary skill in the art at the time the invention was made because the artisan would be motivated by the disclosure of Yamahira et al. to coat the foil of JP '217 with a fluoride resin. In column 4, line 42, Yamahira et al. teach that "[i]f a fluorine-based water-proofing agent is coated, it is possible to prevent rusting to improve operational reliability." Accordingly, the artisan would be motivated to coat the foil of JP '217 with a fluoride resin.

Double Patenting

10. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970);and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

11. Claims 9-16, 21, 23, 25, and 27 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-23 of U.S. Patent No. 6,468,692 (Nemoto et al) in view of JP 10-162801. The claims of the '692 patent do not expressly recite that the pressure release hole is in a position corresponding with a center axis of the winding core, as recited in claim 9. However, JP 10-162801 teaches this feature in Figure 1. Further, in the abstract, JP '801 teaches that "[w]hen gas is generated at charging and discharging the secondary battery, the gas is blow off outside by a cleavage valve arranged in a central part of a terminal and a terminal by passing through this gas passage. Therefore, the deterioration of performance of the secondary battery caused by insufficiency of letting-out of gas can be prevented." Since this provides motivation to locate the pressure release hole of the '692 claims in a position corresponding with a center axis of the winding core, the instant claims define an obvious variation of the '692 claims.

12. Claims 2, 3, 6, 7, 18-20, 22, 24, and 26 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-53 of copending Application No. 09/863,108 (U.S. Pre-Grant Publication No. 2001/0049054) in view of EP 895297. The claims of the '108 application do not expressly recite the capacity values and pressure release areas recited in claims 6 and 19. EP '297 teaches a lithium secondary battery preferably having a capacity of 5Ah, as disclosed in paragraph 27. The battery further comprises

pressure release mechanisms having areas of larger than 0.1 cm^2, whereby the ratio of the area to the capacity is in the range of 0.05-2.0 cm^2/Ah (see paragraphs 76 and 83).

The artisan would be motivated by the disclosure of EP '297 to use a large capacity lithium secondary battery as the battery of the '108 claims. In paragraph 2, EP '297 teaches that lithium secondary batteries are an "effective means for using electric power by storing the electric power in the night. Thus, it is eagerly desired to put a large capacity lithium secondary battery, which is suitable for these uses, into early practical use." The artisan would further be motivated by the disclosure of EP '297 to use valves in the battery of the '108 claims having areas larger than 0.1 cm^2. In paragraph 83, EP '297 teaches that "it is preferable to make the opening area of the pressure release mechanism 0.1cm^2 or more in order to definitely operate the opposite pressure release mechanisms and to secure the safety by making the difference in the operation pressure of the opposite pressure release mechanisms preferably not larger than 8 kg/cm^2." Further, the artisan would be motivated by the disclosure of EP '297 to use capacity and area values such that the ratio of the area to the capacity is in the range of 0.05-2.0 cm^2/Ah. In paragraph 77, EP '297 teaches that when this value is below 0.05, "the pressure release is not sufficiently carried out and accidents such as burst or firing of a battery is caused." Similarly, in paragraph 78, the reference teaches that when the value is larger than 2, "there is a fear that a part of the internal electrode body or components of the battery would jump out from the opening portion, or when a part of the internal electrode body jumps out in the state of a short circuit, inflammable materials around the battery would be fired or burned." Accordingly, since this would motivate the artisan to use capacities and areas in the battery of the '108 claims such

that the ratio of the area to the capacity is in the range of 0.05-2.0 cm^2/Ah, the instant claims define an obvious variation of the '108 claims.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

Response to Arguments

13. Applicant's arguments filed June 27, 2003 have been fully considered but they are not persuasive. Applicants assert that "the purpose and the concept of the present invention are distinct from those of JP '801." In response, it is asserted that there is no requirement that the purpose and concept of a prior art reference be the same as an applicant's. The reason or motivation to modify the reference may often suggest what the inventor has done, but for a different purpose or to solve a different problem. It is not necessary that the prior art suggest the combination to achieve the same advantage or result discovered by applicant. *In re Linter*, 458 F.2d 1013, 173 USPQ 560 (CCPA 1972); *In re Dillon*, 919 F.2d 688, 16 USPQ2d 1897 (Fed. Cir. 1990). This is also applicable to the Teramoto reference, which Applicants assert "cannot provide the pressure release function of the present invention." The Teramoto reference has not been relied upon for such a teaching of a pressure release function. It is believed that the artisan would have a different motivation for applying the teachings of Teramoto, as set forth in the rejection above.

Applicants further assert that "[a] person of skill in the art who was attempting to improve the safety and productivity of the lithium secondary battery described in EP '297 would

not look to disclosure in JP '801, which is directed merely to any kind of secondary battery during normal usage." However, the Examiner has not alleged that a person viewing EP '297 would look to JP '801. On the contrary, a person viewing JP '801 (the primary reference in the rejection) would look to EP '297 (the secondary reference in the rejection) and glean the relevant teachings therefrom. EP '297 provides sufficient motivation to use a large capacity lithium battery having specific areas and capacity/area values, as noted above. Accordingly, the rejection over JP '801 in view of EP '297 is still believed to be proper and is maintained herein.

Allowable Subject Matter

14. Claim 14 would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims and if the above-noted obviousness-type double patenting rejection was overcome.

15. The following is a statement of reasons for the indication of allowable subject matter:

Claim 14 recites, among other features, that the stress applied to the elastic body is not less than 980 kPa and not more than a force at which the elastic body maintains elasticity of not less than 95%. JP 11-49217 does not teach or fairly suggest that the pressure applied to the elastic body by the spacer is within this range. Accordingly, claim 14 contains allowable subject matter.

Conclusion

16. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jonathan Crepeau whose telephone number is (703) 305-0051. The examiner can normally be reached Monday-Friday from 9:30 AM - 6:00 PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Randy Gulakowski, can be reached at (703) 308-4333. The phone number for the organization where this application or proceeding is assigned is (703) 305-5900. Additionally, documents may be faxed to (703) 872-9310 (for non-final communications) or (703) 872-9311 (for after-final communications).

Any inquiry of general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.

JSC

September 12, 2003

J. Crepeau
JONATHAN CREPEAU
PATENT EXAMINER
ART UNIT 1746